



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,782	06/23/2005	Antoine Fares-Karam	003D.0038.U1(US)	4660
29683	7590	10/09/2007		
HARRINGTON & SMITH, PC 4 RESEARCH DRIVE SHELTON, CT 06484-6212			EXAMINER ALANKO, ANITA KAREN	
			ART UNIT 1792	PAPER NUMBER
			MAIL DATE 10/09/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/516,782	Applicant(s) FARES-KARAM, ANTOINE	
	Examiner Anita K. Alanko	Art Unit 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/3/04;2/14/05</u> . | 6) <input type="checkbox"/> Other: ____. |

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the term "high" is a relative term that renders the metes and bounds of the claim unclear. It may be simply deleted.

In claim 4, line 4, the term "the nitrogen" lacks proper antecedent basis.

In claim 7, line 3, the phrase "particularly chlorinated salt of PdCl₂ + HCl" render the metes and bounds of the claim unclear since it is unclear whether it is a required limitation of the claim or not.

In claim 8, it is unclear what the abbreviations stand for. It would be helpful to spell out the name of the polymers. This claim does otherwise, however, overcome the rejection of "high" in claim 1 since the "high temperature...material" is limited to the list of compositions in claim 8.

In claim 11, line 2, the term "the adjusted operating conditions" lacks proper antecedent basis.

Claims 2-3, 5-6, 9-10, 12-13 fail to cure the indefiniteness of their base claim, and are therefore also rejected.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 5-7, 9, 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Charbonnier et al (Journal of Appl. Electrochem., 2001) in view of Andryuschenko et al (US 6,664,122 B1).

Charbonnier discloses a process for metallizing a plastic article (polycarbonate) including the steps of cleaning (page 58, column 1, lines 21-24), plasma etching (page 58, column 1, lines 31-32), grafting (page 58, column 2, lines 16-17), and then metallizing by immersion in a metallization bath (pages 60-62, sections 3.2.1. and 3.2.2.).

Charbonnier fails to disclose a temperature of the metallization bath between 50 and 70 degrees Celsius. Rather, Charbonnier discloses a room temperature bath (page 58, column 1, line 17).

Andryuschenko teaches that temperature is a known metallization parameter and impacts the rate of metallization (col.10, lines 10-11). Andryuschenko teaches a temperature of a copper bath (col.9, lines 55-58) of between 25 and 80 degrees Celsius, preferably between 40 and 60 degrees Celsius (col.10, lines 16-19). It would have been obvious to vary the temperature to the ranges cited (as to claims 1 and 2, between 50 and 70 or between 55 and 65 degrees Celsius; or as to claim 11 the temperature of the bath) in the process of Charbonnier because Andryuschenko teaches that temperatures in that range are known and useful, and because the temperature appears to reflect a result-effective variable, which can be optimized. See MPEP 2144.05 IIB.

As to claims 5 and 12, Charbonnier discloses a time of one minute (page 58, column 1, last line), which is within the range cited for claim 5. Still further, the time determines how much etching is conducted and the surface properties of the surface being etched. Thus, it would have been obvious to one with ordinary skill in the art to conduct the process for the cited time because the time appears to reflect a result-effective variable, which can be optimized. See MPEP 2144.05 IIB.

As to claim 6, Charbonnier discloses a power density of 0.5 W per square centimeter (page 58, col.1, last line), which is within the range cited. The power density is also a process parameter that affects the etching rate and surface properties. Thus, it would have been obvious to one with ordinary skill in the art to conduct the process at the cited power densities because the power density appears to reflect a result-effective variable, which can be optimized. See MPEP 2144.05 IIB.

As to claim 7, Charbonnier discloses a solution of PdCl_2 and HCl (page 8, col.1, lines 8-9).

As to claim 9, Charbonnier does not disclose the thickness, but it would have been obvious to have the cited thickness since the thickness depends on the desired final use of the product, and is thus optimizable.

As to claim 13, Charbonnier discloses a copper bath (section 3.2.2).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Charbonnier et al (Journal of Appl. Electrochem., 2001) in view of Andryuschenko et al (US 6,664,122 B1) and Nogami (US 6,758,224 B2).

The discussion of Charbonnier from above is repeated here.

As to claim 4, Charbonnier fails to disclose to include an inert noble gas in the nitrogen or ammonia plasma. Andryuschenko teaches that it is useful to include neon, helium or argon in a plasma gas in order to further the dissociation of the plasma gas and to increase the rate of etching (col.4, lines 16-52). It would have been obvious to include neon, helium or argon in the method of Charbonnier because Andryuschenko teaches that to do so is useful in order to further the dissociation of the plasma gas and to increase the rate of etching. Further, since the amount of inert gas and reactive gas determine the amount and speed of etching, it would have been obvious to one with ordinary skill in the art to use the cited amounts because the proportions appear to reflect a result-effective variable, which can be optimized. See MPEP 2144.05 IIB.

Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Charbonnier et al (Journal of Appl. Electrochem., 2001) in view of Andryuschenko et al (US 6,664,122 B1) and Doany (US 7,033,648 B2).

The discussion of Charbonnier from above is repeated here.

As to claim 8, Charbonnier discloses polycarbonate, not the cited polymers. Doany teaches that polyimide, a high-temperature polymer, polybutylene (col.2, lines 54+), polystyrenes (col.3, line 4) are known as a substrate for metallization by metallization baths (col.1, lines 7-12) as an alternative, functionally equivalent materials to polycarbonate (col.3, line 11). It would have been obvious to one with ordinary skill in the art to select the cited polymer such as polystyrene as the polymer in the method of Charbonnier because Doany teaches that such is a known, useful and functionally equivalent alternative for polycarbonate for metallization using metallization baths.

As to claim 10, Doany teaches that different polymers may be used, for example polymethylmethacrylate 3 (Fig.1e) and polyimide 2 (substrate) to provide for selective metallization (col.7, lines 25-29). It would have been obvious to metallize as taught by Doany in the method of Charbonnier in order to effect selective metallization, which is useful for producing designs in final products.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ostolski is cited to show a plating bath between 20 and 100 degrees Celsius. Bittrich is cited to show metallizing of plastics such as LCP or polystyrene.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K. Alanko whose telephone number is 571-272-1458. The examiner can normally be reached on Mon-Fri until 2:30 pm (Wed until 11:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Anita K Alanko/
Primary Examiner
Art Unit 1765